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SURFACING KNOWLEDGE FOR TEACHING AND LEARNING THROUGH ATHLETIC EMBODIED METHODS

ABSTRACT

Advancements in qualitative research highlight the importance of interrupting positivist reductionism and allowing for full-bodied sensory experiences as knowledge-generating activities. Embodied research can be empowering for participants as they bridge research with teaching and learning. Yet in the U.S., traditional quantitative and qualitative methods predominate education. While useful, relying on traditional methods alone is limiting because people experience the world in multidimensional, multimodal, and embodied ways. Life in school is a full-bodied experience, and embodied methods can richly describe teachers' and students' school lives. This paper explores embodied cognition via athletic embodied research methods. It is guided by two broad questions, "What knowledge do our bodies hold about learning? How might listening to our bodies during athletic activities surface this knowledge and inform our future practice as educators?" Each author examined their embodied knowledge through a chosen athletic activity (swimming, running, tennis) to generate new understandings about the role of the body in learning. Together, they illuminate how multi-sensory experiences engage the body and mind within the world, forge connections between physical activity and mental well-being, and enhance cognitive processes to allow for deeper understanding of what knowledge is and where it comes from. The insights gleaned from this research can be used for innovating learning activities and assessments to afford students opportunities to learn with and express their learning through their bodies. They also demonstrate the usefulness of embodied methods for educational researchers, especially teacher researchers, to gain a fuller sense of what students know about learning that their bodies experience but they might not easily articulate in words alone. Students can engage with learning through their bodies as sites of inquiry to connect with their knowledge from beyond the walls of the classroom.

Keywords

Qualitative methods; Embodied cognition; Postformalism; Embodied methods; Athletic methods.

1. Introduction

Advancements in qualitative research highlight the importance of interrupting positivist reductionism and allowing full-bodied sensory experiences as knowledge-generating activities (Fullager, 2021). Authors like Springgay (2022) explain that embodied research can empower participants as they bridge research with teaching and learning. Yet, in the U.S., traditional quantitative and qualitative methods predominate education research. While useful, relying on traditional methods alone is limiting because people experience the world in multidimensional, multimodal, and embodied ways (Kincheloe & Steinberg, 1993). School life is a full-bodied experience, and embodied methods can richly describe teachers' and students' school lives. This paper explores embodied cognition (Castro-Alonso, et. al, 2024; Macrine & Fugate, 2021) via athletic embodied research methods. It is guided by two broad questions, "What knowledge do our bodies hold about learning? How might listening to our bodies during athletic activities surface this knowledge and inform our future practice as educators?"

Each author examined their embodied knowledge through a chosen athletic activity (swimming, running, tennis) to generate new understandings about the role of the body in learning. Together, they illuminate how multi-sensory experiences engage the body and mind within the world, forge connections between physical activity and mental well-being, and enhance cognitive processes to allow for a deeper understanding of what knowledge is and where it comes from. The insights gleaned from this research can be used to innovate learning activities and assessments in order for students to learn with and express their learning through their bodies. They also demonstrate the usefulness of embodied methods for educational researchers, especially teacher researchers, to gain a fuller sense of what students know about learning that their bodies experience but they might not easily articulate in words alone. Students can engage with learning through their bodies as sites of inquiry to connect with their knowledge from beyond the classroom walls.

2. Methodology

In this research, we were inspired by Kincheloe and Steinberg (1993) to take a postformal approach that seeks out expansive rather than reductive ways of thinking to problematize teaching, learning, and research so that we may generate new ideas for what learning might look like in our classrooms. According to Kincheloe and Steinberg (1993), for the past century ideologies around the purpose of education in the U.S. have been largely informed by Cartesian Enlightenment thinking that divorces the body and mind in pursuit of logic and reason. Such bifurcation ostensibly removes the sensations and impulses of the body in order to seek out objective, universal Truth. As an organizing framework for education,

Enlightenment thinking privileges cause-effect, linear, reductive logic, which, ostensibly will enable people to engineer the natural and social world to operate more efficiently.

In the field of education, this logic is deeply embedded in the field of behavioral psychology which has had a profound and lasting influence on education and works hand-in-hand with Industrial and Taylorist logic that privileges efficiency in schooling above all else.

From this paradigm of thought, education, or schooling, is something that is done to students by teachers. Kincheloe and Steinberg (1993) posit, however, that such reductionist thinking is not only inaccurate in capturing the complexity of the process of teaching and learning, but it can be harmful for students, especially those who may not represent the white, affluent, male norm upon which the psychology of seminal researchers like Piaget was built. Relatedly, traditional positivist methods have been privileged as tools for researching education, looking for particular learning outcomes, and seeking to find solutions to the problems of achievement gains. Calling these positivist shortcomings into question, some education researchers and methodologists have begun exploring embodied cognition and embodied methods as more robust frameworks and tools for capturing the complexity of learning as an entirety of student experience.

Embodied cognition is the theory that cognitive processes are rooted in the body's interactions with its environment (Gallagher, 2023). This perspective argues that thinking, learning, and understanding are influenced by the body's physical actions, sensory experiences, and contextual surroundings (Varela et al., 2017). The body is not just a carrier for the mind but plays a role in shaping cognitive processes which means that learning should not be thought of as a process that takes place in the brain independent of the body. Instead, learning is a multisensory experience which then changes how one thinks about teaching and learning and the roles of the teachers and learners within learning environments. For instance, Macrine and Fugate (2021) explained that focusing on students' experiences from an embodied cognition perspective can help educators to see how learning is not something a teacher imparts to a particular student, but rather the learner and their surrounding environment "constitute a system" of thoughts, actions, and verbalizations which "may promote the discovery of new relations between their body and the environment" (p. 3). In other words, learning doesn't take place simply in a student's head. Knowledge is generated between a learner's body and mind within a complex environment of which the teacher is just one part. Hence, embodied cognition reshapes traditional educational models by focusing on the importance of integrating physical and sensory experiences into the classroom. Varela et al. (2017) underscore this notion by asserting cognition comes through dynamic interactions between the mind, body, and world. Such dynamic interactions therefore necessitate learners' participation for effective learning. Barsalou (2008) provides further credence to this notion by describing how embodied simulations (imagining actions) facilitate understanding and meaning-making. Whereas, Kiefer and Trumpp (2012) discovered that parts of the brain controlling movement are active during language use, showing that using gestures can help students understand and communicate better in classrooms.

Moreover, Wilson and Golonka (2013) explained that understanding is connected to real-life situations, supporting learning through hands-on experiences.

Research literature about embodied cognition supports learning strategies that are inclusive, hands-on, and interactive, helping teachers create environments that encourage engagement, self-control, and overall growth. Embodied cognition fits within modern teaching approaches because of the focus on social-emotional learning and using different strategies to meet the needs of all students by engaging students' whole selves, mind and body.

For us, this speaks not only to the need to complexify our understanding of what it means to teach and learn but also the need for different ways for students and research participants to demonstrate what they know. As doctoral students and faculty in a Doctor of Education program, we are thereby compelled to try out embodied methods to explore the knowledge our bodies hold that might provide insights for different means of teaching and learning and researching about what it means to teach and learn. Here, we recognize knowledge is not simply data bits that can be extracted from people's minds (Kuntz, 2015). It is a complex and shifting embodied process that warrants complex and embodied means of expression. Especially for children of elementary age, teachers do often tap into embodied forms of knowledge. Countless scholars and practitioners have emphasized the importance of movement and creative expression for young children's learning. Yet, embodied knowledge tends to be tapped less frequently as children get older when text predominates as a means of expression and testing as a means of assessment. As teachers, learners and researchers using embodied cognition and embodied research methods ourselves, in this article, we aimed to surface our own ways of knowing in order to generate ideas for how to transform our practices as teachers and researchers to better honor the rich and complex knowledge that our and our students' bodies hold. In the next section, we detail our procedures, which draw from the genre of autoethnography but are distinct in their attention to embodied knowledge of the self as opposed to self as a vehicle to understanding culture.

3. Exploring Embodied Knowledge through Athletic Embodied Methods

This project was a collaboration we designed in fulfillment of a research requirement for Samantha and Lucijan who were doctoral students. For their research internship, they were paired with Tricia, a doctoral professor, whose research focuses on postformal research methods. As part of this work, she has been exploring the potential of embodied methods for generating and displaying knowledge about teaching and learning. Simultaneously, Samantha was also taking a course with Tricia about curriculum during which students were given opportunities to demonstrate their knowledge by trying out innovative methods. In this course, Samantha selected swimming as a method, and this became the inspiration for focusing specifically on athletic embodied methods. In our conversations, we discussed the different athletic activities we each engaged in and brainstormed the kinds of knowledge that is held and expressed by our bodies when we engage in these activities. Eventually, we each settled on an athletic activity that we felt held particular knowledge for us.

We also decided to each select something different in order to provide dimension because looking across differences can often provide more complex insights than looking for sameness (Kincheloe & Steinberg, 1993). The athletic embodied methods we selected were swimming (Samantha), tennis (Lucijan), and running (Tricia). To engage in this exploration, we started with the questions, “What knowledge do our bodies hold about learning? How might listening to our bodies during athletic activities surface this knowledge and inform our future practice as educators?”

4. Methodological Reflections

While this inquiry does not fit squarely into the traditions of autoethnography, our methodology took a similar approach; wherein, we engaged in athletic activity, reflection, and analysis to better understand how athletic embodied methods might contribute to our understandings of embodied cognition in classrooms. Unlike autoethnography, our goal was not to explore culture through examination of the self, but rather to explore the role of the body in surfacing what and how we know. However, to accomplish our goals, we adopted an approach similar to co-autoethnography (Coia & Taylor, 2005) or duoethnography (Burleigh & Burm, 2022).

After developing our two overarching questions together, we then individually practiced our athletic activities and documented our reflection of our experiences with embodied knowledge while doing those activities. Our primary data sources were journal reflections, which all three authors produced after engaging in their athletic activities. The reflections were added to a shared Google document so all authors could read them. Samantha also recorded a video of herself while swimming which she shared with the research team. After capturing and individually reading our first round of reflections, we met as a group to discuss what insights emerged in relation to our overarching questions.

Next, we revisited the literature about embodied cognition and learning and generated a second set of reflections that specifically addressed what insights were produced about the knowledge of the body that could connect to our teaching practices. Our goal was to go deeper beneath the surface, connecting to our past as learners and our present as teachers to generate new insights about how we might refine our teaching in light of what we learned about the knowledge of our bodies (i.e., embodied cognition).

5. Surfacing Embodied Knowledge

In the section below, each of us has shared insights that emerged from our reflective journals. These are presented as micro essays that capture our listening, learning, and preliminary insights. Each micro essay can stand on its own, but they are all connected by the overarching theme of embodied knowledge. Following these micro essays, we will provide a discussion of our preliminary observations and takeaways and then conclude with implications for our teaching and research practice.

5.1 Samantha: Reconnected Mind, Body and Spirit During Swimming

Swimming has been an essential part of my life since childhood. It started as a recreational activity but became a source of peace, discipline, and self-discovery. Over the years, swimming has become more than just a sport; it is a way to connect my mind and body. Every stroke requires a focus rhythm and makes me aware of my physical and mental state. For example, I must regulate my breathing to maintain stamina and stay calm, mainly during challenging sets or events. This connection between physical effort and mental focus displays embodied cognition because it shows how thinking and learning are tied to movement and sensory experiences. Swimming also engages multiple senses, such as the feeling of water against my skin, the sound of my breath, and the rhythm of my strokes. These sensory experiences create a state where my body and mind work together. This experience shows me how students learn; they engage their whole selves, not just their minds when completing tasks. By reflecting on swimming as an embodied method, I have learned to listen to my body more and understand how it influences my emotions, focus, and problem-solving ability. This method has helped me think about how learning in the classroom can also be a full-bodied, sensory experience that supports more profound understanding.

5.2 Lucijan: Self-Other Embodied Awareness through Tennis

Tennis plays an integral role in bridging physical movement and cognitive functioning. While playing tennis, I make quick decisions, think critically to interpret opponents' moves, and adjust my tactics accordingly. It is evident that my brain communicates quickly with my body to a) swing the racket, b) position my body, and c) maintain critical balance. In addition, it is through this physical movement that my motor skills, agility, spatial awareness, and cognitive processing are all enhanced/strengthened. In addition, timing and rhythm also encompass embodied cognition. Critically synchronizing hand-eye coordination, evaluating the wind and speed of the ball, and engaging in play all require high levels of cognitive thought. Through these activities, the brain is heavily used; motor control, decision-making, evaluating, and reacting all have connections between cognitive thought and physical movement. Tennis has been a significant part of my life because it provided a place to strengthen my agility and coordination while improving my critical thinking. My family believed in exercise with a purpose: to not only strengthen the body but the mind as well. Playing tennis helped me build strength and support my critical thinking/problem-solving abilities. I have found that I learned to evaluate and solve problems more quickly and view situations from wider angles rooted in various points of view. Furthermore, the embodied cognition between the brain and playing tennis has shown significant growth as it has supported my physical and cognitive development.

5.3 Tricia: Self-World Awareness through Running

Growing up, I was athletic, but I never considered myself a runner. I was a softball and basketball player. Running was a necessary activity for playing ball. As I got older and I could no longer fit team sports into my life, I missed the physical activity and came to running as a way to be active on my own time. I have been running long enough now to consider myself a runner. My first half marathon was in 2013, and while I don't run that kind of distance regularly, every few years I prepare for a long race. Over my more than a decade of running, I have learned a lot about myself and the world. While I won't claim that participating in team sports wasn't a learning experience for me, what I learned was different. Running was the first athletic activity I did by myself. For the first time, I could be an athlete and listen to my body uninterrupted by others' participation in the activity. I began to notice things about myself, the way my body moved, how certain muscles felt on different terrain, when my body felt drained, and when I felt energized. At the same time, running long distances outdoors has connected me with the natural and manmade world in a more intimate way. I run the same routes, and I notice things, birds, trees, buildings, and much more. I also have noticed that sometimes how I run provides me with space for contemplation, while sometimes, I run and enter a place where I don't think, my body just runs almost on autopilot. Each of these states is a kind of "flow" state, and both are when running feels best, one for filling my mind and the other for emptying it. The runs I dread most are the "slog" runs. These are the ones that are just maintenance. I do them because I know I need to for my physical and mental health, but my body feels so heavy. When I connect this to thinking about embodied cognition, how I feel as I run reflects the knowledge of my body. My flow state is a clue to when and how thinking happens or doesn't.

6. Final Considerations

By reflecting on our embodied knowledge during athletic activities, we were able to see how physical movement and sensory experiences shape learning and could contribute insights to research about teaching and learning. For example, sports like swimming, running, and tennis require focus, coordination, and adaptability, which display many aspects of the learning process (Shusterman, 2012). At the same time, they require a tacit awareness of one's environment and the body's relationship to the earth and others. These methods also provide a way to explore how the body and mind work together to process information and build resilience. Through these activities, each of us experienced feelings of being imperfect and recalibrating our physical movements to adjust. Importantly, that didn't make what we were doing incorrect, there were just some things we needed to change in relation to the larger whole of completing the activity. As we transpose this into thinking about research, the limitations of assessments and academic progress measures are laid bare.

For instance, a teacher or researcher may look for change in a student's academic performance over time in relation to a particular pedagogical intervention; however, the learner's need to recalibrate and adjust to the intervention might not be taken into consideration. The learner is thereby positioned as a passive receptacle, which leaves half of the teaching-learning dyad under-explored and potentially misunderstood.

Our athletic activities also offered insights into emotional and sensory experiences that typical research methods might overlook and that teachers in classrooms might not pay much attention to while teaching. Specifically, they point to the deeply contextual nature of knowledge, where context is understood as also having multiple dimensions. For instance, when Tricia noted her "slog" runs, her feelings about running demonstrate a complexity that is tied not only to this activity but her physical and mental state in relation to the various activities in her life at any given moment. Such complexity which is folded into the term "slog" is difficult to capture by other means. While if someone were to interview Tricia about her running, they may ask a question that triggers her to use the word "slog," which means "to work hard at something over a period of time." But an interviewer would be unlikely to uncover the depth and complexity of what "slog" means in this specific context of Tricia's life because it is a very specific term that holds culturally embedded and embodied meaning for Tricia alone. If in a classroom, a student were experiencing the "slog" in a learning activity or test, they might appear to be toiling away at a task for a long time. Maybe they are successful at completing it or maybe they abandon it. If they abandon it, they may be seen as disengaged, lazy or incompetent, labels which dismiss what might be a more complex interpretation of the student's embodied state in that moment. Whereas a researcher or teacher might tap into the learner's embodied knowledge by asking how their body feels in particular moments or while performing particular tasks. Further probing embodied sensations might allow learners to explain how their feelings while doing a particular task in a particular moment could be linked to other emotional and physical states located in another space and time. For the learner those past embodied resonances are very much experienced in that moment even as the time and place of origin is not where their body is located in the moment. This embodied knowledge might remain invisible if the teacher or researcher is not attuned to the importance of excavating sensations of the body to glean information about the learning experience.

Complexity is a recurring theme in all three of our experiences with athletic, embodied methods. For Samantha, her experience with swimming demonstrates a complexity of physical exertion, sensory experience, and mindfulness. It is worth noting, too, that being immersed in water changes what those words mean and how those sensations are experienced because of the effects that immersion has on the senses of the body. So, when Samantha says she listens to her breathing while swimming, this is very different from the listening that Tricia and Lucijan would experience while running or playing tennis. Athletic embodied methods ask researchers to see their bodies as sources of knowledge, which challenges traditional ideas of objectivity in research (Varela et al., 2017).

All our experiences are clearly subjective, but it is easy to recognize, ironically, that in their distinctions they also present an objective truth– the knowledge of the body moving in the world is of a profoundly higher order than what school learning requires and what most research can capture. Not only are there a multiplicity of sensory inputs that people experience, organize and respond to all at once during athletic activities, but as Lucijan's reflection showed, there is also critical thinking and decision-making that takes place often so quickly and fluidly that it seems non-existent.

These insights raise certain considerations that are significant for researchers and practitioners alike. First, embodied knowledge is occurring all the time, and if researchers are to tap into this complex well of knowledge, they need to engage with participants differently by thinking about local sources of knowledge that are unique to the participants or communities with whom they are working. Paying attention to context and the body in the world across space and time can open new avenues for exploring the world from the participants' standpoints. Research as a knowledge-generating activity can itself be more experiential and embodied and yield new insights that might not be accessible through traditional research methods. For teacher researchers, embodied methods offer a way to explore learning beyond the traditional classroom. Embodied methods help uncover knowledge that is felt or sensed rather than spoken, which may upset the dominance of language and text in both teaching and research. By reflecting on their own embodied experiences, teachers may begin to consider what students know that cannot be captured in print on an exam or written assignment. This doesn't mean that text and testing aren't still important, but these tools are limited and there may be other means of capturing students' complex, context-dependent knowledge. By reflecting on embodied knowledge, teachers might better understand their students' needs and strengths so they can leverage those strengths for deeper learning. Embodied methods also encourage creativity such as having students express their understanding through art, movement, or performance, which allows for a bigger picture of their lives and their learning (Noë, 2015). Interactive activities, play-based learning, and project-based learning are some of the many ways teachers can combine embodied methods into daily instruction to strengthen students' skills, and many of these activities could easily be transposed into research methods. Yet above all, we assert, taking embodied knowledge and embodied methods seriously has the potential to make learning richer and more humanizing for students and teachers. When we take the knowledge of our bodies seriously and honor that in our teaching and research practices, we can shift away from doing schooling to students and toward experiencing learning with students, accessing text through life, and living and learning with our whole selves together.

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7. References

- Barsalou, L. W. (2008). Grounded cognition. *Annual Review of Psychology*, 59(1), 617–645. <https://doi.org/10.1146/annurev.psych.59.103006.093639>
- Burleigh, D. & Burm, S. (2022). Doing duoethnography: Addressing essential questions. *International Journal of Qualitative Methods*, 21: 1-8.
- Castro-Alonso, J. C., Ayres, P. Zhang, S., de Koning, B. B. & Paas, F. (2024). Research avenues supporting embodied cognition. *Educational Psychology Review*, 36: 10.
- Coia, L. & Taylor, M. (2005). From the inside out and the outsider in: co/autoethnography as a means of professional renewal. In C. Kosnik, C. Beck, A. R. Freese & A. P. Samaras, eds. *Making a difference in teacher education through self-study*, pp. 19-33. Springer.
- Fullager, S. (2021). Body-mapping as a feminist new materialist intra-vention: Moving learning with embodied confidence. In D. Lupton and D. Leahy, eds. *Creative approaches to health education: New ways of thinking, making, doing, teaching, and learning*, pp. 57-72. Routledge.
- Gallagher, S. (2023). *Embodied and Enactive Approaches to Cognition*. Cambridge University Press.
- Kincheloe, J. L., & Steinberg, S. R. (1993). *A critical constructivist approach to education*. Routledge.
- Kiefer, Markus & Trumpp, Natalie. (2012). Embodiment theory and education: The foundations of cognition in perception and action. *Trends in Neuroscience and Education*. 1. 15-20. 10.1016/j.tine.2012.07.002.
- Kuntz, A. M. (2015). *The responsible methodologist: Inquiry, truth-telling, and social justice*. Routledge.
- Macrine, S., Fugate, J. (2021). Translation embodies cognition for embodied learning in the classroom. *Frontiers in Education*. <https://doi.org/10.3389/feduc.2021.712626>
- Noë, A. (2015). *Strange tools: Art and human nature*. Hill and Wang.
- Shusterman, R. (2012). *Thinking through the body: Essays in somaesthetics*. Cambridge University Press.
- Springgay, S. (2022). *Feltness: Research-creation, socially engaged art, and affective pedagogies*. Duke University Press.
- Varela, F. J., Thompson, E., & Rosch, E. (2017). *The embodied mind: Cognitive science and human experience*. MIT Press.
- Wilson, M., & Golonka, S. (2013). Embodied cognition is not what you think it is. *Frontiers in Psychology*, 4, 58. <https://doi.org/10.3389/fpsyg.2013.00058>.

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